3.1 Relationships Between Lines

Goal Identify relationships between lines.

VOCABULARY

Parallel lines

Perpendicular lines

Skew lines

Parallel planes

Line perpendicular to a plane

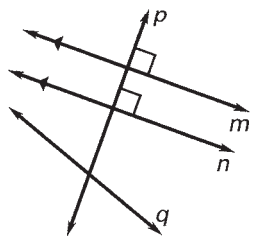
Example 1 ***Identify Parallel and Perpendicular Lines***

Determine whether the lines are *parallel*, *perpendicular*, or *neither*.

a. n and m

b. p and q

c. n and p



Solution

a. Lines n and m are _____.

b. Lines p and q are _____.

c. Lines n and p are _____.

Follow-Up **In Example 1, how do you know that the statement is true?**

Lines n and m are parallel.

_____

Lines n and p are perpendicular.

_____

Lines n and q are not parallel.

_____

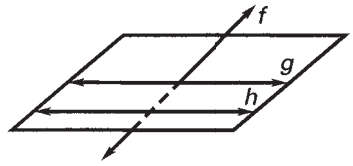
Lines n and q are not perpendicular.

Example 2 ***Identify Skew Lines***

Determine whether the lines are skew.

a. f and g

b. f and h



Solution

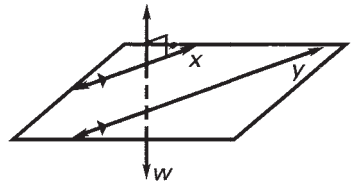
a. Lines f and g are not skew lines because _____.

b. Lines f and h are skew lines because _____

_____.

Checkpoint **Use the diagram shown.**

1. Name a pair of parallel lines.



_____

2. Name a pair of perpendicular lines.

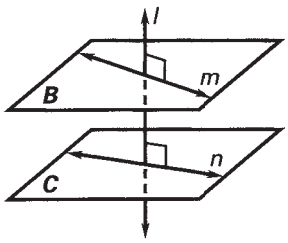
_____

3. Name a pair of skew lines.

Example 3 ***Identify Relationships in Space***

a. Name a plane that appears parallel to plane *B*.

b. Name a line that is perpendicular to plane *B*.



Solution

a. Plane ___ appears parallel to plane *B*.

b. Line __ is perpendicular to plane *B*.

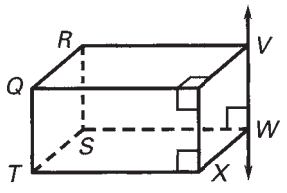
Follow-Up

In Example 3, is line *l* perpendicular to plane *C*? Explain.

In Example 3, is line *n* perpendicular to plane *C*? Explain.

Checkpoint **Think of each segment in the diagram as part of a line.**

4. Name a line that is skew to $\overleftrightarrow{VW}$.



5. Name a plane that appears parallel to plane *VXW*.

6. Name a line that is perpendicular to plane *VXW*.